

App. Serial No. 10/663,935
Docket No. STFD.039PA
OFFICE ACTION RESPONSE & AMENDMENT

In the Drawings:

Attached please find eight formal drawing sheets, labeled Figures 1-3, 4A-4B, 5, 6A-6B, and 7-8. No changes have been made from the immediate prior version, and no new matter is added.

Entry of these Replacement Drawing Sheets is respectfully requested.

Attachment: 8 Drawing Sheets.

Remarks

Applicant respectfully traverses all of the rejections because the cited portions of *Goldman et al.* (U.S. Patent No. 6,825,927) fail to teach or suggest that the light detection circuit is on the same substrate as the processing circuit as in the claimed invention. For the reasons and arguments set forth below, Applicant submits that the claimed invention is allowable over the cited references.

The Office Action dated July 7, 2006 indicated that the drawings were objected to and listed the following rejections: claims 1-2, 5-11, 15-20 and 22-25 stand rejected under 37 C.F.R. § 102(e) over Goldman; claims 3-4, 12-14, 21, and 26-30 are rejected under 35 U.S.C. § 103(a) over Goldman; and claims 31-37 are rejected under 35 U.S.C. § 103(a) over Goldman as applied to claim 26 above, and further in view of *Herron et al.* (U.S. Patent No. 6,222,619).

Regarding the objection to the drawings, Applicant has provided formalized drawings as indicated on page 2 of this response and requests that the objection be removed.

Applicant traverses the Section 102(e) rejections of claims 1-2, 5-11, 15-20 and 22-25, because the cited portions of the Goldman reference fail to correspond to the claimed invention when considered in its entirety; including, for example, limitations directed to a light detection circuit on a substrate, the light detection circuit being communicatively coupled to a processing circuit that is on the same substrate. The Goldman reference does not teach that detector 30 and processor 28 are on the same substrate (*see, e.g.*, Fig. 3 and col. 4, lines 32-60).

Moreover, the Office Action's assertion of inherency on page 4, lines 5-6 is improper because the Office Action does not provide objective evidence or cogent technical reasoning to support the conclusion of inherency. "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art" (*see, e.g.*, M.P.E.P § 2112(IV)). It is not inherent that detector 30 and processor 28 of Goldman are on the same substrate, as is acknowledged in the Office Action (by the statement, "[it is] inherent that the system

disclosed as a whole is integrated on one or more substrates" (page 4, lines 5-6)). Per various references to support structures for the Goldman system, there is no basis for suggesting that the Goldman system is on one substrate as claimed by Applicant, and the argument of inherency cannot be supported.

Accordingly, the Section 102(e) rejections of claims 1 and 10, and claims 2, 5-9, 11, 15-20 and 22-25 which depend from claims 1 and 10, are improper and Applicant requests that they be withdrawn. Notwithstanding the impropriety of the rejections of all of the dependent claims as related to the independent claims above, the limitations of certain dependent claims are addressed further below.

Regarding claim 6, the Office Action fails to cite any portion of the Goldman reference that corresponds to claimed limitations directed to a color filter adapted to remove a portion of the signal generated by the light detection circuit. The cited portion of the Goldman reference teaches an optical filter in combination with an LED or excitation light source (*see, e.g.*, col. 1, lines 38-45), not a color filter in combination with the light detection circuit as in the claimed invention.

Regarding claim 16, the Office Action fails to cite any portion of the Goldman reference that corresponds to claimed limitations directed to a processing circuit adapted to scale the value of the pixel data in the generated signal. The cited portion of the Goldman reference teaches that multiple profiles of excitation can be programmed during the manufacturing and calibration of the fluorometer (*see, e.g.*, col. 5, lines 53-67). The cited portion of the Goldman reference relates to the programming of the excitation source and, as such, does not teach scaling the value of the pixel data in the generated signal as in the claimed invention.

Regarding claim 18, the Office Action fails to cite any portion of the Goldman reference that corresponds to claimed limitations directed to a control circuit coupled to an external input, the control circuit adapted to control the light detection circuit to detect light at a selected time in response to the external input.

Regarding claims 22-25, the Office Action fails to cite any portion of the Goldman reference that corresponds to claimed limitations directed to a noise reduction circuit that reduces background noise in the signal generated by the light detection circuit.

The Goldman reference appears to teach that the signal levels corresponding to each well are equalized which obviates downstream processing of the data from the different wells to obtain normalized response (*see, e.g.*, col. 3, line 18-29). Therefore, the Goldman reference does not teach a noise reduction circuit as in the claimed invention.

Applicant further traverses the Section 102(e) rejection of claim 10 because the Office Action's assertion of inherency on page 4 (lines 1-4) is improper. The Office Action cites to portions of the Goldman reference that teach that detector 30 collects light from all of the wells 28 simultaneously (*see, e.g.*, col. 4, lines 38-42); however, Applicant can find no mention of a "each pixel of the CCD array" associated with detector 30 as asserted by the Office Action. Moreover, the Goldman reference teaches that in typical operation, light from the LED array 22 individually illuminates each sample well 28 and the resulting fluorescence is measured by the detector 30 (*see, e.g.*, col. 6, lines 9-13). Therefore, it is not inherent that detector 30 is a pixel array as asserted by the Office Action. Accordingly, the Section 102(e) rejection of claim 10 is improper and Applicant requests that it be withdrawn.

Applicant traverses the Section 103(a) rejections of claims 3-4, 12-14, 21 and 26-37 because the cited portions of the Goldman reference do not correspond to the claimed limitations as discussed above in connection with the Section 102(e) rejections of claims 1 and 10. In this regard, the rejections of claims 3-4, 12-14 and 21 are improper because these claims depend from claims 1 and 10. Independent claims 26 contains the same limitations directed to a photodetector that is on the same substrate as a processor as in claim 1; the cited portions of the Goldman reference fail to correspond to these limitations as discussed above. The corresponding rejection thus relies upon the same (improper) rationale. Therefore, Applicant requests that the Section 103(a) be withdrawn.

Applicant further traverses the Section 103(a) rejections because the Office Action has failed to make a *prima facie* case of obviousness. The Office Action merely states that the limitations found in claims 3-4, 12-14, 21, and 26-30 are obvious, without providing further cites to any reference as is required by the M.P.E.P. § 706.02(j). For example, the Office Action concludes that a MOS-based circuit as claimed would be an

obvious solution allegedly because it would provide a compact design. However, MOS-based circuits for such biological applications were thought not to work because of noise issues prevalent in such technology for this type of weak signal; MOS is not an obvious solution at all for such applications due to the reduced sensitivity. The Office Action alleges that the assay sizes of claim 12 would simply be an issue of design choice, but there appears to be no indication in the prior art of any suggestion that a skilled artisan would or should pursue the claimed assay sizes. Further, the Office Action fails to cite to any reference that corresponds to claim 13 limitations directed to the processing circuit being programmed to compensate for the quantum efficiency of a reaction involving the biological sample. In another example, the Office Action fails to cite to any reference that corresponds to claim 14 limitations directed to the processing circuit which is adapted to include, for each pixel in the output, pixel data from a block including at least two immediately adjacent light detectors. In a further example, the Office Action fails to cite to any reference that corresponds to claim 29 limitations directed to processing pixel data. Accordingly, the Section 103(a) rejections are improper and Applicant requests that they be withdrawn.

In view of the above discussion, Applicant believes that each of the rejections has been overcome and that the application is in condition for allowance. A favorable response is requested. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is encouraged to contact the undersigned at (651) 686-6633.

Respectfully submitted,

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